

Influencing Company Conversations towards Continuous Improvement with NASA Supplier Assessments

3rd Annual NASA Supply Chain Quality Assurance Conference

Dan Berry

Director – Quality Management Resources

October 15th 2009



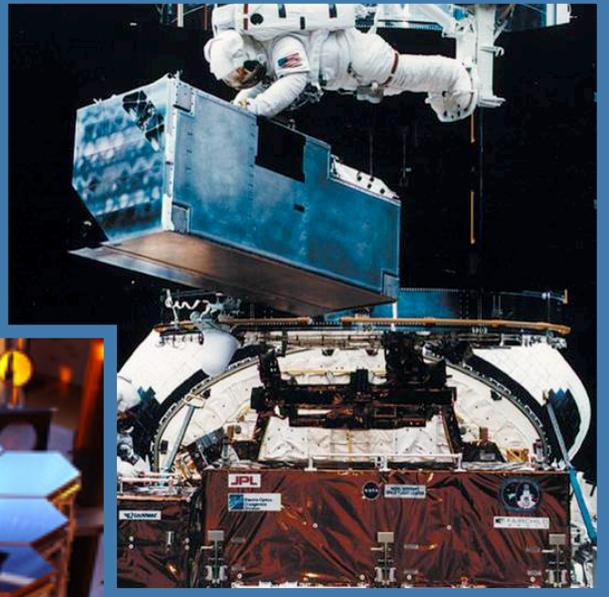
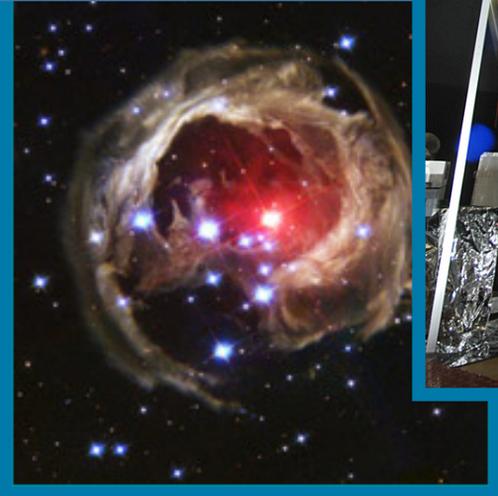
**Ball Aerospace
& Technologies Corp.**

**Agility to innovate,
Strength to deliver**



Delivering innovation to NASA for 50 years

Ball Aerospace is one year older than NASA

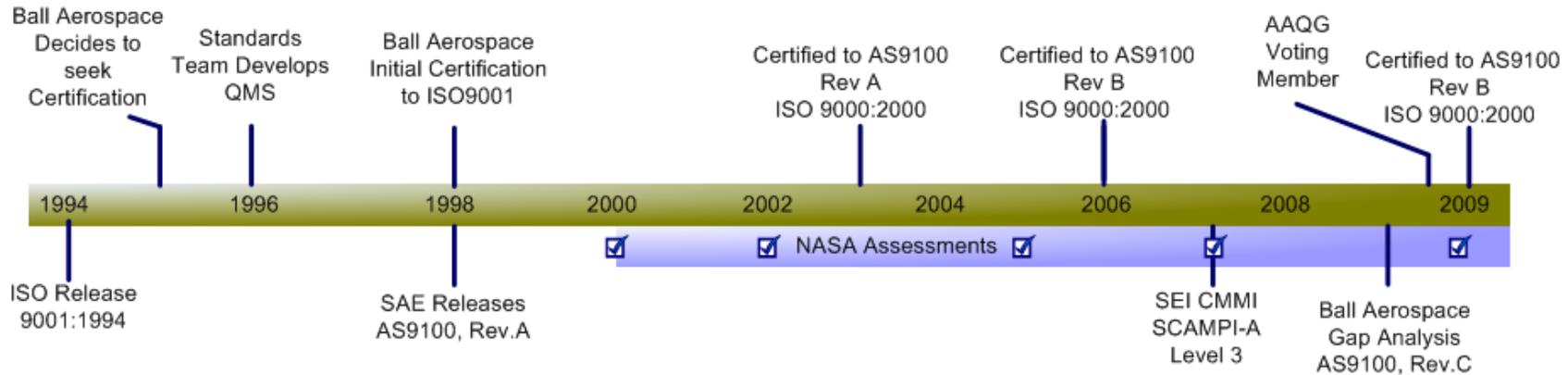




NASA helping shape Ball Aerospace's process future

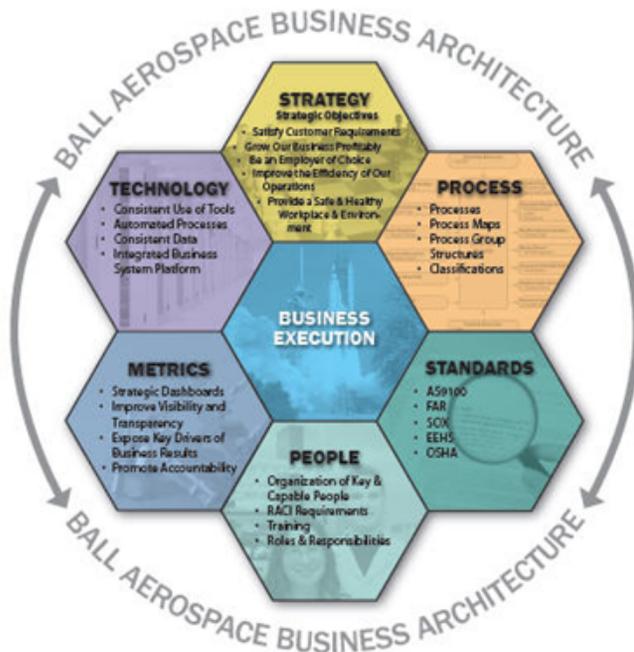
An eye past our own transparencies

We respond to the findings and step back to check the big picture



■ NASA Assessments influenced:

- Ball Business Architecture & Tier 1 Metrics
- Executive Process Steering Group
- Timely Corrective Actions via Closed loop Corrective Action System
- Process owners, roundtables, coaching, management metrics, out of date document reviews
- On schedule Internal Audits



Customer Satisfaction and ratings – 2007 Best Practice Commendation

Much improvement with Stamp Control, Metrology, Certifications/Training, Limited Life Material



Metrics measure our progress toward strategic objectives



Vision

To be the first choice for innovation and performance, from services to systems



Strategic Objectives

- Satisfy customer requirements
- Grow our business profitably
- Be an employer of choice
- Improve the efficiency of our operations
- Provide a safe and healthy workplace and environment



**Agility to innovate,
Strength to deliver**

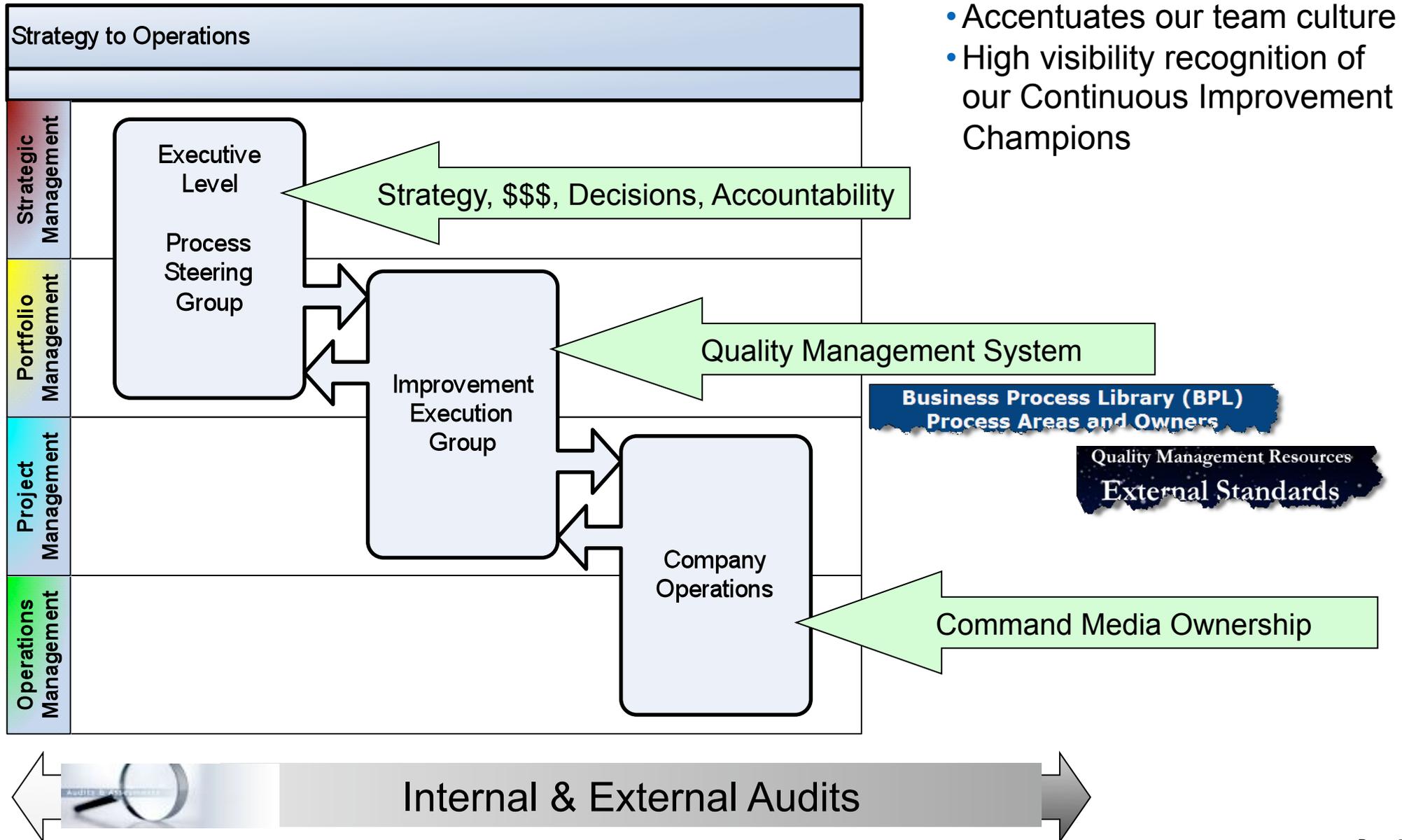
Rev. B

Tier One Metrics
Satisfy customer requirements
• Customer satisfaction
Grow our business profitably
• Compound annual growth rate sales
• Compound annual growth rate orders
• EBIT margin
• After tax return on invested capital
• EVA (401K Performance)
Be an employer of choice
• Voluntary attrition
• Year-to-year improvement in Diversity Hiring
Improve the efficiency of our operations
• Cost Performance
• Schedule Performance
• Technical Performance
Provide a safe and healthy workplace and environment
• OSHA recordable cases
• OSHA lost time cases
• Environmental leadership program status



NASA influence improves Ball Aerospace's ability to support Continuous Improvement

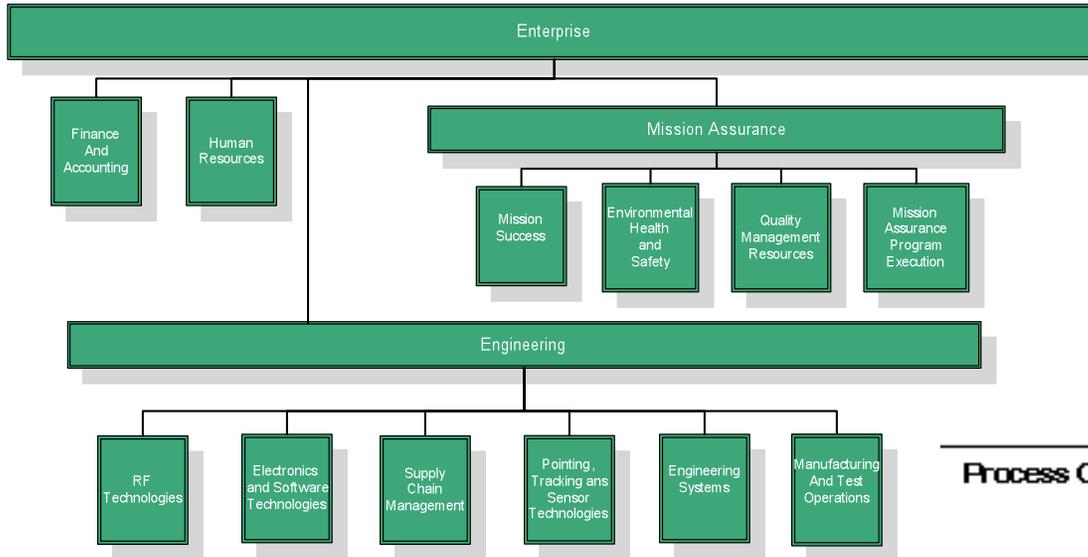
Involvement from key executives creates the connections throughout





Process Ownership is managed

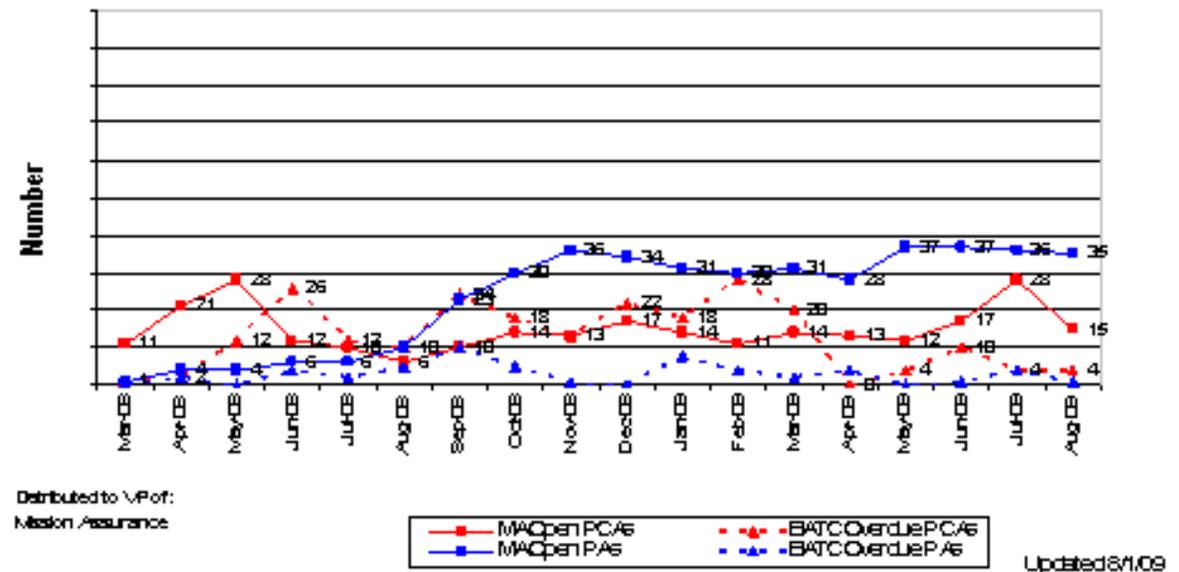
Emerging as a Preventive Action company with data



- Process Owners and Process Change Approval Boards
- Supported with roundtables, coaching, management metrics, out of date document review

- Timely responses
- Closed loop Corrective Action System
- Mission Assurance leading Ball Aerospace towards a Preventive Action company

**Process Corrective Action (PCA) and Preventive Action (PA)
Monthly Open/Overdue Status (Mission Assurance)**





NASA has helped accelerate our Internal Audit direction

Mature, Stable, Certified Internal Audit Group is adding value

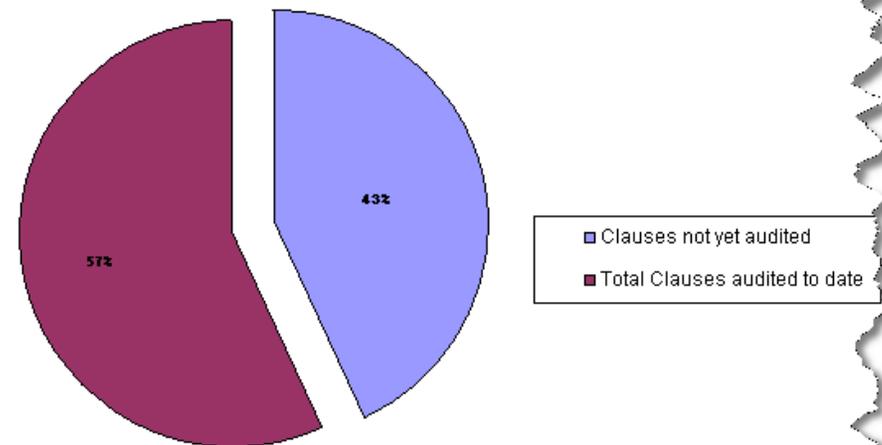
8 Internal Audit Members

- 1 Area Manager
- 2 Internal Auditors
- 5 Cross Discipline Agents



Audit #	Audit Area	Hours	Auditor	Scheduled Month
610	Paint - AMC	4	Lawson	Jan-09
611	ESD - Boulder	6	Lawson	Jan-09
612	Metrology	120	Lawson	Jan-09
613	Potting - FM	4	Lawson	Feb-09
614	Etch Lab	6	Lawson	Feb-09
615	DTC Lab	4	Lawson	Feb-09
650	Tactom Health Check	3	Lawson	Unscheduled
656	Service Health check	2.5	Lawson	Unscheduled
652	Records Health check	1.5	Lawson	Unscheduled
653	Electronic Assy Health check	2.5	Lawson	Unscheduled
655	Flight Assy health check	3	Lawson	Unscheduled
654	Machine Shop Health check	2.5	Lawson	Unscheduled
657	High Strength Fasteners	40	Lawson	Unscheduled
651	WW2 Pre-Ship Document review	30	Lawson	Unscheduled
659	TACTOM - PM Health check	3	Lawson	Unscheduled
617	Metal Finish	4	Lawson	Mar-09
618	Limited Life - Boulder	4	Lawson	Mar-09
619	Clean benches & Tents	4	Lawson	Mar-09
623	Product requirements	18	Lawson	Mar-09
661	SCQA assessment	20	Lawson	Unscheduled
620	Lubrication Lab	4	Lawson	Apr-09
621	Flourescent Penetrant, XRAY	6	Lawson	Apr-09
622	ESD - AMC	4	Lawson	Apr-09
627	MRB NC product	50	Lawson	Apr-09
624	Cleaning Lab	8	Vonbokern	May-09
629	Paint - Boulder	7	Peterson	May-09
625	Fire Sprinkler	6	Lawson	May-09
626	DTC Lab	5	Lawson	May-09
660	Material Acquisition	45	Lawson	May-09
647	Limited Life - AMC	6	Schoefer	Jun-09
648	Cleanroom		Bandy	Jun-09
630	ESD - Boulder	4	Robinson	Jun-09
616	CAPA	20	Lawson	Jun-09
658	WW2 Pre-ship docu		Lawson	Unschedu

2009 Internal Audit Status
(% of AS9100 Standard Audited to Date)





NASA has influenced our External Audit group maturity

Stable Staff, Process, Tools

Industry involvement and managing our suppliers is adding value

- Participated as an observer in several GSFC and as Joint Audit Planning Committee (JAPC) auditors
- Experienced group of five auditors
 - 4 ASQ certified auditors
 - 1 AAQG certified auditor
 - Working to reach certified lead auditor status



- Process
 - Audit checklist – industry standards
 - Audit master schedule
 - Soft skills/knowledge
- Closed loop corrective action system integration

Company Name	City	St	PO Value	Quality System	Planned Date
Infinite Design Works, Inc	Loveland	CO	33,438.64		07/27/09
Fibertek Inc.	Herndon	VA	1,876,603.00		07/30/09
Quatek Manufacturing Inc	Colorado Springs	CO	35,106.55		08/04/09
RPC Manufacturing Solutions, LLC	Denver	CO	4,950.00		08/14/09
Cryogenic Technical Services	Longmont	CO	97,550.00		08/17/09
Tayco Engineering, Inc.	Cypress	CA	166,727.00	AS 9100 Revision B	08/17/09
Collins Machine and Mfg. Inc.	Louisville	CO	573,808.19	ISO 9001:2000	08/20/09
Sun APT (Advanced Product Testing)	Longmont	CO	27,631.44	ISO 9001:2000	08/25/09
Ihly Industries	Englewood	CO	230,952.67	ISO 9001:2000	08/25/09
Strainsert Company	West Conshohocken	PA	17,833.00	AS 9100 Revision B	08/25/09
Accurate Gasket	Englewood	CO			08/27/09



External Audit Highlights Show a Sustainable Foundation

■ NASA System Audit

- Lead: Goddard Space Flight Center Code 300, Safety and Mission Assurance
- Scope: AS9100 Rev B and NASA contractual requirements
- Dates: 19-22 May 2009; 28 audit days
- Results: 8 Minor non-conformances and 12 observations (2007; 7 Minors, 15 Observations)
- *“Cards documented mainly “low level” and NASA did not feel as though there were systemic issues” –paraphrased from NASA at closing meeting*

■ AS9100 Re-certification Audit

- Certification Body: BSI Management Systems
- Scope: All clauses in AS9100 Rev B
- Dates: March 2009: 14 audit days
- Results: 4 Minor non-conformances, 1 Observation (2006; 6 Minors, 3 Observations)

